



# IT Capital & Operational Savings

With Converged Infrastructure Technology

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## Executive Summary

*Shrinking budget.....fewer staff.....ballooning power and cooling costs.....server sprawl.....aging IT infrastructure.....running out of data center capacity*

These are common IT issues being faced today, especially given the challenges of the worldwide economic downturn. It is more important than ever to achieve the maximum efficiency from your IT infrastructure. IT Convergence offers the promise of operational savings and faster deployment time as its payback. But even implementing individual components of a Converged Infrastructure template can have significant benefits unto themselves. Such as energy and facility savings through consolidation, streamlining processes through management and automation software and network simplification through virtualization and consolidation of the entire communication infrastructure.

### Facility and Energy Savings through Consolidation

One aspect of the Converged Infrastructure trend is consolidation, compressing the footprint of the datacenter to ever smaller and more manageable space. This has forced technology vendors to deal with the bane of all high tech equipment, power consumption and heat generation. HP has developed a set of technologies to control and reduce the amount of power required to run their converged infrastructure. Combined with more powerful processing technology means significant savings in migrating to new equipment based on these Converged Infrastructure technologies.

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Achieve up to 97 percent savings in power and cooling costs and reduced administrative time with the next generation of HP ProLiant technology that pays for itself in as little as three months.

- **20:1 consolidation enables**
  - 97% savings on power and cooling costs
  - 95% reduction in software licenses
  - 95% reduction in number of physical servers to manage
  - 27x more performance per watt
- **Reduce, reclaim, extend the life of your data center**
- **Reduce capital and operational expenditure**
  - Essential infrastructure management software included
  - Reach new levels of application availability and up-time with 50% better storage
  - Upgrade within budget with HP Financial Service plans such as *Pay-as-you-grow*
  - Flexible service and support options to meet your business goals
- **Achieve a return on investment in as little as two months.....**

### Management and Automation Tools

Another attribute of the Converged Infrastructure is automation. Taking complex, labor intensive, time consuming processes and streamlining these through sophisticated management software. Processes such as gauging system health, performance monitoring, remote control, automated deployment, vulnerability scanning and patching, power management, and virtualization management are simplified with HP's Insight Management Suite.

## Network Virtualization and Consolidation

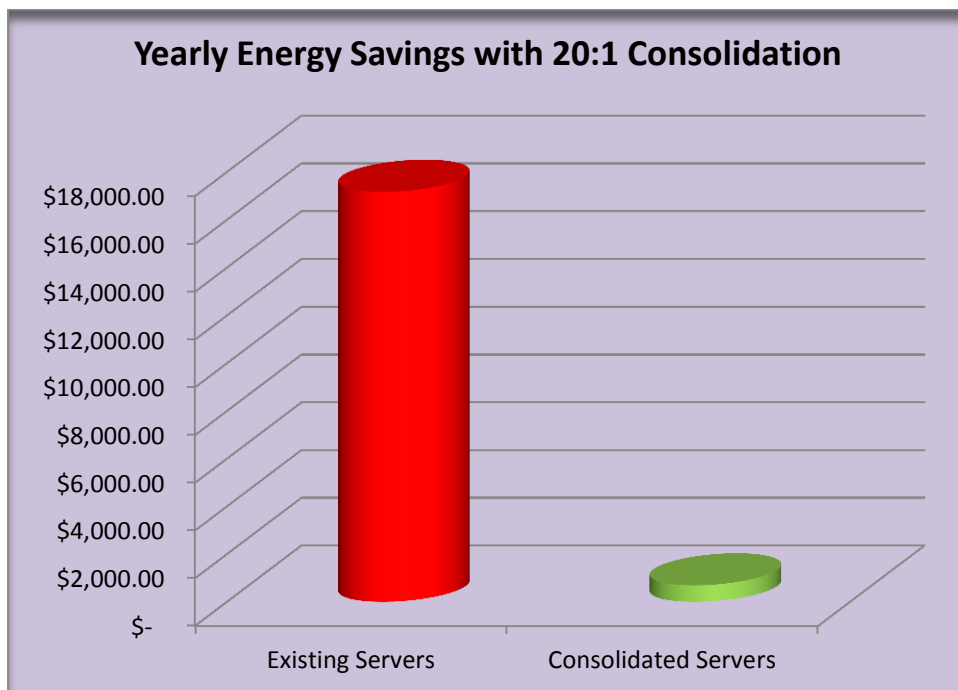
Is your network getting simpler? Probably not. The HP Virtual Connect FlexFabric virtualizes and consolidates the number of network cards, switches, and cabling normally required for server connections. This results in an overall reduction in cost for acquiring and simplification in maintaining your network infrastructure.

## 20:1 Consolidation enabled with Converged Infrastructure technologies embedded in new blade and rack servers

A 20:1 consolidation ratio can dramatically reduce energy costs by 97 percent, reclaim capacity, reduce licensing and simplify management. Combined with 27x<sup>1</sup> more performance per watt within the same infrastructure capacity and HP Thermal Logic technology, that can pay for itself in as little as two months.

### HP Thermal Logic technologies

- **Intelligent Power Discovery**—the first technology to create an energy-aware network that bridges IT and facilities. Intelligent Power Discovery automatically discovers servers, maps these to the power source, verifies power redundancy, and helps ensure everything is hooked up correctly, while feeding the information to Insight Control for ongoing power monitoring and control.



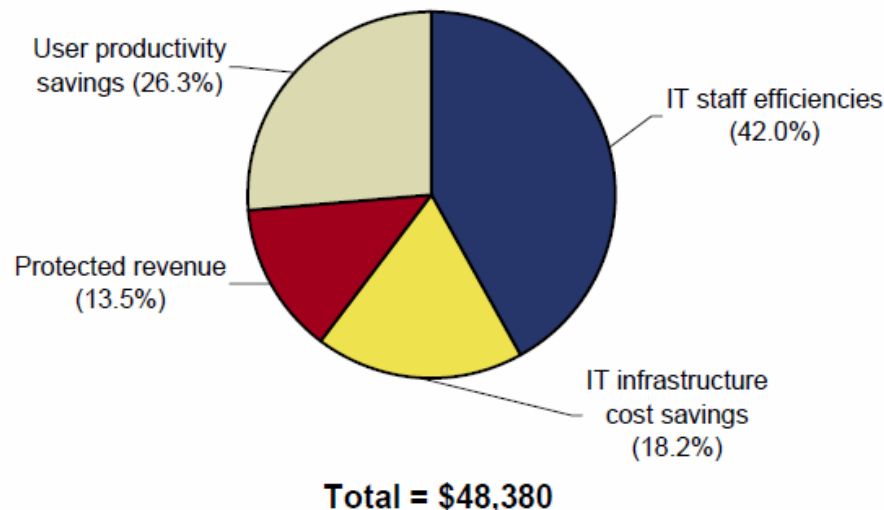
- **Dynamic Power Capping**—simply set power limits on servers or enclosures to stay within available power capacity—in a safe manner that reacts quickly and protects your electrical circuits. In many environments, Dynamic Power Capping allows three times as many servers to be deployed within an existing data center, reclaiming lost capacity due to power over-provisioning.
- **Sea of Sensors**—a collection of 32 smart sensors inside the server chassis that reduces server power usage based on real-time adjustments to operating conditions.

## Reduce expenses by up to \$48,380 (per 100 users) over three years with Insight Control

A unique set of embedded technologies and flexible management tools is available to maximize overall utilization of server infrastructure.

- **HP Insight Control**—reduces operational expenses by up to \$48,380 for every 100 users and decreases unplanned downtime by 83 percent<sup>2</sup>. With a single, easy-to-use management console to proactively monitor server health and performance, deploy new servers quickly, optimize power efficiency and manage virtual machines.
  - **HP Integrated Lights-Out Advanced (iLO)**— take control of servers at any time, regardless of location to help reduce IT staffing and travel budgets as well as improve system recovery times.
  - **HP Insight Control server migration**—easily automates the migration from older servers to the newer technology through a simple wizard driven process. From the management console, simply identify the source, identify the target and hit GO.
- **HP Insight Dynamics**—is advanced infrastructure lifecycle management software that instantly adjusts to dynamic business demands – provisions and modifies a complex infrastructure in minutes. HP Insight Dynamics includes:
  - Integrated infrastructure design with automated activation of servers, storage and networking
  - Built-in, energy aware capacity planning and rebalancing tools
  - Automated disaster recovery and failover capabilities.

### Average Benefits over Three Years per 100 Users: All Products



2 - IDC Study

## HP BladeSystem Virtual Connect FLEX-10 Technology

HP Virtual Connect technology is an interconnect option for HP BladeSystem environments that is used in lieu of standard pass-through or managed switch offerings. It is designed to provide a simpler way to connect blade servers to datacenter networks by creating pools of LAN and SAN

addresses that can be assigned dynamically to server bays in software, instead of being hardwired into the servers' NICs. To upstream switches, Virtual Connect Ethernet uplinks look like aggregated NICs.

Viewing connectivity resources in this way allows customers to reduce network connections, avoid switch management, and increase efficiency in operational management. IT managers minimize the touch points required for server and network administrators to add or replace servers and move workloads. Administrators can quickly and easily move resources to meet changing business needs, eliminate bottlenecks, or scale to accommodate spikes in demand.

**Go from this**

Traditional Rack Infrastructure

**217**  
73 parts  
144 cables  
No FCoE licenses

**To this**

Virtual Connect for HP FlexFabric

**2**  
2 parts  
No cables  
No FCoE licenses

**Virtual Connect Flex-10**

HP Virtual Connect Flex-10 builds on the core HP Virtual Connect technology by extending virtualization to I/O, increasing the number of NIC ports as seen by applications on each blade server. It can maximize network utilization by partitioning each 10Gb Ethernet connection into up to four individual NICs, which HP refers to as "FlexNICs." To a virtual machine hypervisor, these look the same as physical NICs presented to vNICs and vSwitches. Because up to four FlexNICs can share a single 10Gb connection, only one HP Virtual Connect interconnect module is needed for four FlexNICs, compared with the four switches that would have been required with the previous-generation blade I/O technology. This can reduce the networking hardware costs and support burden. With most hypervisor vendors recommending six to eight physical function NIC connections per server, VM deployments can consume all available traditional NIC and switch expansion capacity, and that's without considering Fibre Channel connectivity

“Think of Virtual Connect Flex-10 like a multi-core processor, but for networking. Just like a quad-core processor contains four processors in one, a Virtual Connect Flex-10 NIC includes up to four network connections, or FlexNICs. The network bandwidth of each connection can be adjusted for the application being used, which gives a tremendous amount of flexibility for managing workloads.”

Bobby Rorls, Worldwide Program Manager for HP

The unique capability to include four physical connections per port means organizations can more than quadruple the number of connections per blade and eliminate up to 75 percent of their network connection costs. With 10Gb built into the server from the start, IT teams also get better overall virtual server performance within an enclosure, such as fast virtual machine moves between servers.

Sweden’s Vägverket has estimated they would need 4 to 5 more full time employees if they had not implemented Virtual Connect Flex-10 technology in their datacenter.

## **Return on Investment**

IT convergence will become the template for the data center going forward with the payback of faster deployments and lower operational & capital costs. The speed organizations will be able to migrate to this new paradigm will vary greatly depending on several variables including the maturation of cloud computing. But each aspect of the Converged Infrastructure as it is phased in will provide a significant return on investment.

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<sup>1</sup> Based on HP internal testing comparing hardware on DL380G4 to DL380G6 with Intel® Xeon® processor 5600 series

<sup>2</sup> IDC Gaining Business Value and ROI with HP Insight Control Management Software, September 2010